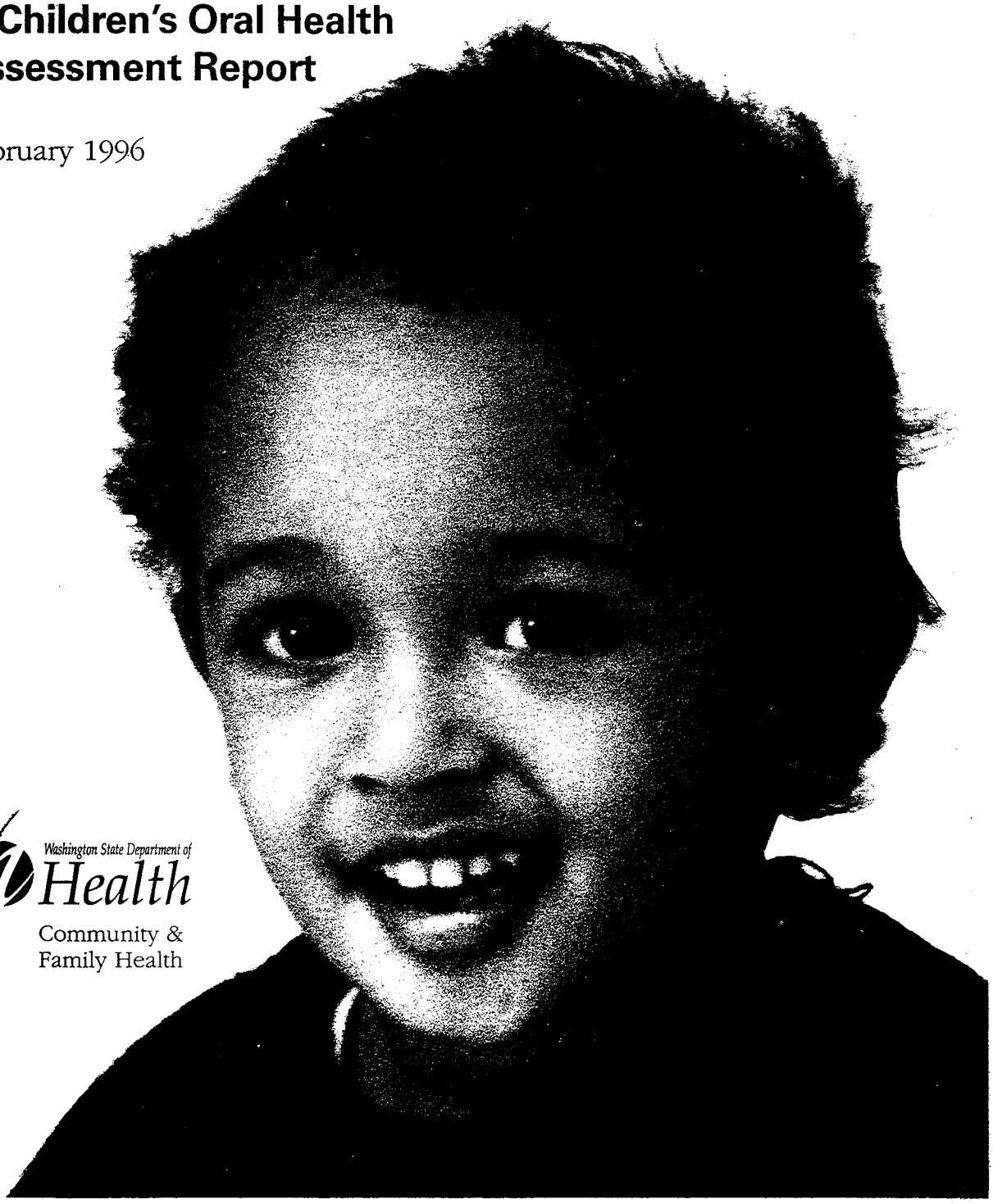
Washington State Smile Survey

A Children's Oral Health Assessment Report

February 1996



Washington State Department of Health

Community & Family Health

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Survey Background

Dental disease is an infectious disease process affecting children and adults. While the vast majority of Washington children and adolescents have been affected by dental disease, vulnerable populations with lower income suffer disproportionately. The National Institute for Dental Research (NIDR) reports that 80 percent of tooth decay is concentrated in 20 percent of children.[1]

In order to survey the needs of children at risk within Washington, the Maternal and Child Health (MCH) Oral Health Program developed and implemented the Smile Survey during the 1993-94 school year. Based on national studies that establish low income and minority groups as high risk for dental disease, the Smile Survey targeted counties with high-risk populations, in combination with a representation of geographic and rural/urban characteristics. Counties included in the survey were: Cowlitz, Franklin, Grays Harbor, Island, King, Okanogan, Pacific, Pend Oreille, Spokane, Whatcom, and Yakima.

Schools from these counties were randomly selected. Children ages six to eight years and adolescents age 15 years were selected to comply with Healthy People 2000 guidelines. Also selected were children age four from Head Start and the Early Childhood Education and Assistance Program (ECEAP).

The survey was conducted by trained and calibrated dental hygienists. An intra-oral visual screening of the teeth (without x-rays) was completed on each child.

Results: Head Start and ECEAP children

Thirty-eight percent (38 percent) of the Head Start and ECEAP children had current or past history of dental caries (decayed, filled, or missing teeth). Overall, 21 percent of these young children with untreated disease were in need of restorative dental care. Of those, seven percent were in need of urgent care as evidenced by presence of pain or infection. The Hispanic, American Indian and Asian children screened had the highest rates of dental disease.

Baby bottle tooth decay (BBTD) was experienced by 13 percent of the Head Start and ECEAP children. Significantly more Hispanic, American Indian and Asian children had BBTD compared to their Caucasian peers.

Results: Elementary school children

Forty-six percent (46 percent) of the second graders screened had current or past history of caries. Seventeen percent (17 percent), with untreated disease, were in need of restorative dental care, including two percent who required urgent care because of pain or infection. When compared to Caucasian and African-American children, a significantly higher proportion of Hispanic, American Indian, and Asian children had experienced dental disease.

Only 19 percent of the second grade children had at least one dental sealant (a plastic coating applied to the chewing surface of the tooth to prevent decay). This is far below the Healthy People 2000 Objective which calls for a 50 percent prevalence of dental sealants.

Those children for whom English is a second language were more likely to have caries experience and rampant caries (seven or more teeth affected), and less likely to have sealants.

Results: High school adolescents

Fifty-seven percent (57 percent) of the tenth grade adolescents screened had current or past history of caries. Thirteen percent (13 percent), with untreated disease, were in need of restorative care, including 0.3 percent in urgent need of dental care. A higher percentage of the Caucasian children residing in rural areas were in need of care, compared to their urban counterparts.

Forty-three percent (43 percent) of the tenth graders had at least one dental sealant. This is close to the Healthy People 2000 Objective for dental sealants (50 percent).

Conclusions

The Washington Smile Survey utilized a practical approach to gathering information for program planning purposes. It targeted children and adolescents at high risk for dental disease. The data do not represent the oral health status of all children in the state.

With the data from the Smile Survey, progress can now be made toward improving children's oral health and moving toward the objectives outlined in Healthy People 2000 and Washington State's Public Health Improvement Plan. This will require a cooperative, coordinated endeavor involving communities, professionals, and individuals.

Dental disease continues to be a significant health problem for a segment of Washington's population, with Hispanic, American Indian, and Asian students at highest risk. Preschoolers from Head Start/ECEAP populations are particularly vulnerable. The Smile Survey underlines the need for education, treatment, and prevention programs which target populations at greatest risk for dental disease and those who face geographic and cultural barriers to accessing dental care.

Introduction

"You're not healthy without good oral health."

former Surgeon General C. Everett Koop

Dental disease is preventable

Dental disease is an infectious disease process affecting children and adults. It may be the most prevalent—yet the most preventable—disease known to man. By the age of 18, over 84 percent of children have experienced dental disease in the form of caries (cavities).[2]

Over the past twenty years, the prevalence of tooth decay in the U.S. has declined.[3] This may be attributed to the use of fluoride, including the ingestion of fluoridated water. Fluoride has decreased the prevalence of decay on the smooth surfaces of teeth but has had less effect on the chewing surfaces (pits and fissures) of teeth. Currently, eight or nine out of every ten cavities that school children experience occur on the chewing surfaces.[4] And although drinking fluoridated water can significantly reduce the risk of having dental caries, 58 percent of Washington residents do not drink from fluoridated water systems.[2]

Those with greatest need have access problems

While the majority of Washington children and adolescents have been affected by dental disease, the vulnerable populations who have lower income suffer disproportionately. The National Institute for Dental Research (NIDR) reports that 80 percent of tooth decay is concentrated in 20 percent of children.[1]

Two major factors affect an individual's overall oral health status: their disease rate and their ability to access and obtain dental treatment. Unfortunately, those individuals at highest

risk of having dental disease (low socio-economic status, minority or immigrant status, etc.) are also the least likely to have access to routine professional dental care.

Access to primary and preventive dentistry can be difficult for those without the means to pay for care. Low-income populations rely heavily on Medicaid to pay for their health care, but only 10 percent of dentists nationwide accept patients enrolled in Medicaid.[5] In Washington State in 1994, 25 percent of dentists accepting Medicaid served 86 percent of those Medicaid clients who received care. Only 27 percent of Medicaid-eligible children received dental care.[6] The lack of access to dental care is at crisis levels for low income and Medicaid-eligible children.

Dental disease is a public health problem

Healthy People 2000 Objectives address oral health status, risk reduction, and access indicators (Appendix D). The Washington Public Health Improvement Plan (PHIP) identifies oral health as one of the state's key public health problems (Appendix E). Dental disease is known to:

- reduce overall health and productivity;
- increase health care costs; and
- result in pain, disfigurement, speech impairments, low self-esteem, lost school days, and serious nutritional problems.

The public perception—especially among those who can afford dental care or have dental insurance—is that dental disease is a "natural occurrence" that deserves little attention or dollars. However, 95 percent of dental disease is preventable. Therefore, the prevalence of dental disease is an indicator of the ability of the health care system to meet the needs of the population.

Background

"Dental Braintrust" started the wheels rolling

In 1989, the Maternal and Child Health (MCH) Oral Health Program convened a public health advisory committee called the "Dental Braintrust." The Braintrust was comprised of individuals from both the public and private sectors who were recommended as experts in academia, research, management, and service delivery. The mission of the Braintrust was to recommend to the MCH Oral Health Program an action plan for developing an effective, accessible oral health system based on existing activities.

The Braintrust concluded that there were not sufficient oral health status data for informed decision-making by policy makers.[7] Two of the Braintrust's twelve recommendations specifically sought to obtain more complete oral health status data:

- Develop a database, specifically for Washington State, to document oral health status;
- Design and implement an ongoing collection and analysis system to assess oral health status and treatment methods.

Based on these two recommendations, the MCH Oral Health Program reported on secondary data in *The Oral Health of Washington Children and an Oral Health Surveillance Plan.*[8] This analysis indicated that:

- There were very little data available on the oral health status of children in Washington; and
- No system existed to routinely monitor disease trends or progress in attaining the MCH Oral Health Program Objectives.

The *Oral Health Surveillance Plan*, therefore, recommended that a method be developed to determine, and routinely monitor, the oral health needs of Washington's children in a way that is clinically relevant and cost-effective.

New patterns called for new methods

In order to develop an effective oral health survey, an understanding of current disease trends was necessary. In the late 1970s, published reports indicated that the prevalence of dental caries among children in the United States was declining.[3] However, further analysis of the 1986-87 children's survey found that caries were unevenly distributed among U.S. children, with about 80 percent of the caries occurring in only 20 percent of the children.[1]

This concentration of disease in relatively few children led to the concept of targeting surveys, and thus public health prevention programs, toward the highly affected at-risk populations.

The Smile Survey

A Unique Approach

National studies conclude that tooth decay is an infectious disease concentrated among certain high-risk groups (low income, minority and immigrant populations). Based on this premise, the Maternal and Child Health Oral Health Program developed and implemented a practical approach to surveying the oral health status of Washington's high-risk children and adolescents. The survey methodology was unique because it utilized a modified random sampling, which assured that the status of high-risk children and adolescents was being measured.

The Smile Survey was based on World Health Organization (WHO) standards for collecting oral health status data. The method suggested by WHO uses a stratified cluster sampling technique, which aims to collect statistically significant and clinically relevant information. This approach was considered the most cost-effective way to obtain data for targeted and effective program planning.

The survey used the Healthy People 2000 Oral Health Objectives as data collection markers. Rather than using the traditional method of counting tooth surfaces with experience of decay (decayed, missing, and filled tooth surfaces), the Smile Survey counted the number of teeth and the number of children and adolescents affected by decay. This provided more relevant information for program and policy development.

Identifying the high-risk sample sites

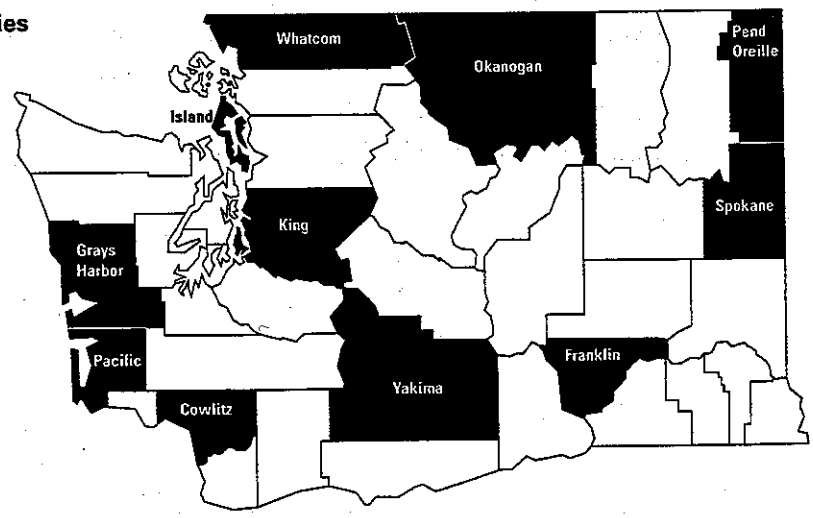
A demographic analysis of the state evaluated counties on the following characteristics:

- percent of Hispanic population
- percent of non-Caucasian population
- unemployment rate
- percent of Medicaid children
- dentists per 100,000 population
- dentists per 10,000 Medicaid recipients
- active Medicaid dentists per 10,000 Medicaid recipients

The survey also sought to include counties that represent Washington's three distinct geographic regions: the coast, the I-5 corridor, and eastern Washington. Study sites (at the county level) were selected in each of these three regions which represented both urban and rural settings and included areas where specific high-risk groups were located.

Based on these evaluations, the counties included in the survey were: Cowlitz, Franklin, Grays Harbor, Island, King, Okanogan, Pacific, Pend Oreille, Spokane, Whatcom, and Yakima. For detailed information on why particular counties were selected for participation in the Washington Smile Survey, refer to *The Oral Health of Washington Children and an Oral Health Surveillance Plan.*

Washington counties participating in the Smile Survey



Survey Methodology

The sample size for each county was based upon the percentage of the state's population living in that particular county with a projected total sample size of 2,500 children.

The Year 2000 Oral Health Objectives for children are based on six- to eight-year-olds and 15-year-old cohorts. In order to capture these age cohorts, children in the second and tenth grade were targeted. Forty-five public elementary schools and 16 public high schools in selected counties were randomly chosen to take part in the survey (Appendix C). Only those children who returned a consent form were screened.

Head Start Programs were selected in order to obtain data for children three to five years old. Head Start and ECEAP Programs in Cowlitz, Franklin, Grays Harbor, Island, King, Okanogan, Pacific, Pend Oreille, Spokane, Whatcom, and Yakima Counties participated in the Washington Smile Survey. Because Head Start and ECEAP Programs have blanket consent forms for dental screenings, all children present on the day of the exam took part in the survey.

Dental hygienists employed by local health districts within selected counties collected the oral health status data. Each of these hygienists attended a three-hour training and calibration session conducted by the lead oral epidemiologist. The training provided detailed information on data collection methods, including a review of the National Institute of Dental Research's diagnostic criteria.

A trained and calibrated hygienist with survey experience was selected as coordinator. She made initial contact with schools, coordinated survey dates, and distributed consent forms. To assure that data were collected in a calibrated manner throughout the state, the coordinator supervised and assisted the hygienist screener at the first survey site in each county.

Using a portable light and a mouth mirror, the dental hygienist completed a visual screening of each child's teeth. No x-rays were taken or used in the screening.

The information on the data collection forms was entered into an ASCII file using Epi-Info. The data were analyzed using SPSS-PC.

Participation rates

- Head Start and ECEAP
  All children present participated
- Elementary school children
  87 percent of the children enrolled particpated
- High school adolescents
  12 percent of the students enrolled participated

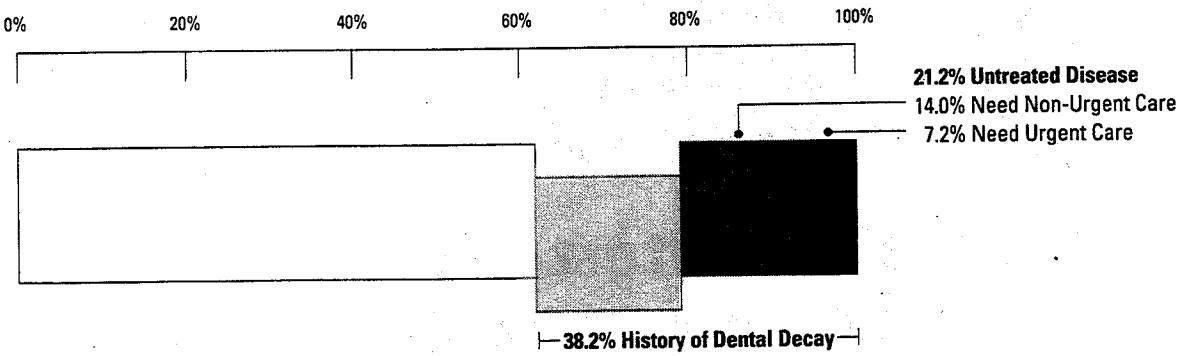
Head Start and ECEAP Children

Dental problems are the number one health concern of ECEAP children in Washington State.

Head Start and Early Education Assistance Program (ECEAP) children are representative of low-income preschool children in Washington State. A total of 1,063 children between three and five years of age were screened (mean age = 4.3 years). Forty-seven percent of the children screened were female, 66 percent were Caucasian, and English was the primary language for 83 percent of the children.

Of the children screened, 38 percent had at least one tooth with a history of dental decay. A history of dental decay means that a child had either a cavity, a filling, or a tooth that was missing due to an extraction. Twenty-one percent of these young children with untreated disease were in need of restorative dental care. Of those, seven percent were in need of urgent care as evidenced by presence of pain or infection (abscess). Since radiographs (x-rays) were not taken, this is assumed to be an underestimation of the need for dental care, as small cavities between the teeth may not have been identified (Fig. 1).

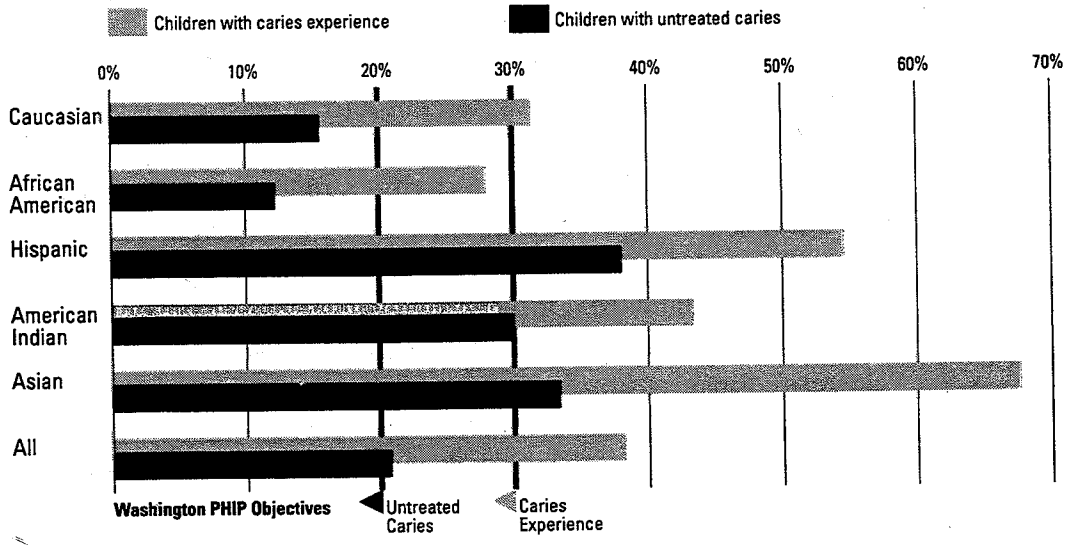
Fig. 1–Head Start and ECEAP Children Needing Dental Care
Washington State Smile Survey 1993–94



Race and Ethnic Origin

When stratified by race/ethnic origin, significant differences appeared in the oral health status of the Head Start and ECEAP children (Table 1, Page 29). The percent of children needing treatment ranged from 13 to 38, and the percent with dental caries experience ranged from 28 to 68 depending on race/ethnic origin. Based on this data, it appears that Asian, Hispanic, and American Indian children have more dental disease than Caucasian or African-American children (Fig. 2).

Fig. 2–Oral Health Status of Head Start and ECEAP Children by Race with State Objectives
Washington State Smile Survey 1993–94



Immigrant Status

There has been concern among public health professionals in Washington that recent immigrant groups have very poor oral health. In order to measure the oral health status of these populations, English skills were used as a method for identifying children of recent immigrants. At the time of the screenings, the teacher was asked what language each child's family spoke in the home.

English was the primary language for the majority of the Caucasian, African-American, and American Indian children. However, 56 percent of the Hispanic children screened and 79 percent of the Asian children had English as a second language (not spoken in the home), suggesting a more recent immigrant status and the likelihood of differing cultural values within the family. When stratified by English skills, both the Hispanic and Asian children for whom English was a second language experienced more disease and had more untreated decay than the English-speaking children (Table 2, Page 29).

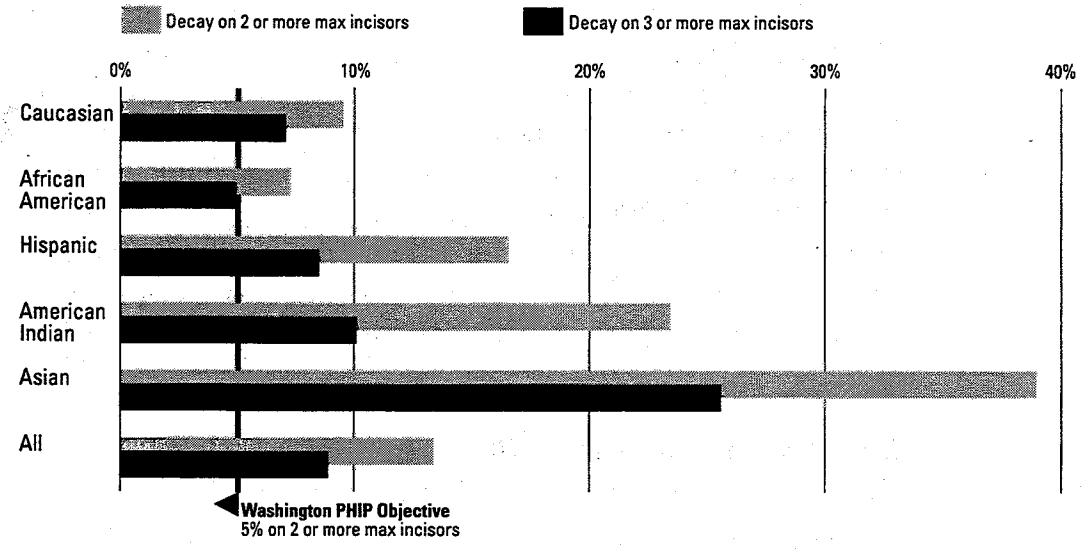
Baby bottle tooth decay (BBTD)

Baby bottle tooth decay (BBTD), a term endorsed by the Healthy Mothers-Healthy Babies Coalition, is a disease of young children characterized by a distinctive pattern of severe tooth decay in the primary dentition. The decay pattern usually begins with the maxillary primary incisors (upper front teeth) followed by the primary molars (back teeth). BBTD is attributed to improper nursing habits such as continuous nighttime or nap time use of a bottle, prolonged use of the bottle past the age of about one, or use of a sweetened pacifier. Hospital emergency rooms are handling cases costing up to $3000 to treat a child with this painful and debilitating dental disease.[2]

A uniform definition of BBTD, however, has not been accepted within the dental community. For this reason two definitions will be used to define BBTD: 1) two or more maxillary incisors with buccal and/or lingual decay; and

2) three or more maxillary incisors with buccal and/or lingual decay. Using the first definition, 13 percent of the children had a decay pattern similar to BBTD (Table 3, Page 30). Significantly more Hispanic, American Indian and Asian children had BBTD compared to their Caucasian and African-American peers (Fig. 3).

Fig. 3–BBTD in Head Start and ECEAP Children by Race
Washington State Smile Survey 1993–94



Healthy People 2000 Objectives

The National Oral Health Objectives for the Year 2000 do not specify goals for disease indicators in preschool children. There is one objective which relates to BBTD and caregiver behavior, which has not been addressed in this survey.

The State of Washington's BBTD objectives are reflected in the preceding charts.

Elementary School Children

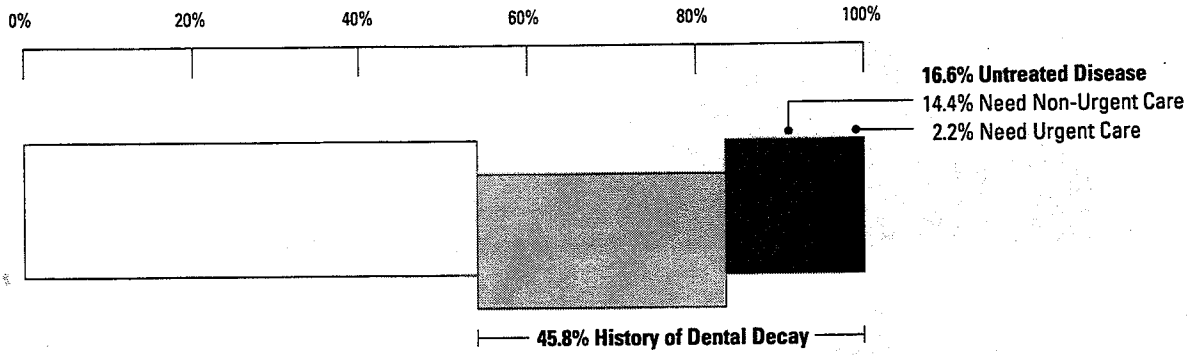
By the age of seven, nearly 11 percent of children have evidence of seven or more cavities.

A total of 4,635 children between the ages of six and eight years were screened. Half of the children screened were female, 79 percent were Caucasian, and English was the primary language for 94 percent of the children.

Approximately 46 percent of these young students had current or past history of dental disease in their primary and permanent teeth. A history of rampant caries (caries on seven or more teeth) was observed in 10.9 percent of the children. Almost 17 percent with untreated disease were in need of restorative dental care, including 2.2 percent who required urgent care because of pain or infection (abscess). The percent of children in need of dental care is assumed to be an underestimation because radiographs (x-rays) were not taken (Fig. 4).

Only 19 percent of the students had a dental sealant on at least one permanent tooth (first molars). Dental sealants provide an effective way to prevent decay on the chewing

Fig. 4–Elementary School Children Needing Dental Care
Washington State Smile Survey 1993–94



surfaces of molars (back teeth), which are most vulnerable to caries. A clear resin is used to cover the "pits and fissures" on the top of the teeth so that cavity-causing bacteria cannot reach areas that are difficult to clean and for fluoride to penetrate.

Race and Ethnic Origin

As with the Head Start and ECEAP children, significant differences in oral health status appeared when the data were stratified by race/ethnic origin (Table 4, Page 30). The percent of six- to eight-year-old children needing treatment ranged from 15 to 40, and the percent with dental caries experience ranged from 39 to 71. A significantly higher proportion of the Hispanic, American Indian, and Asian children had a history of caries and required dental care compared to their Caucasian and African-American peers.

Immigrant Status

In order to evaluate the oral health status of recent immigrants, the data were also stratified by English skills (Table 5, Page 31). The analysis excludes African-American and American Indian children because almost all of these children had English as their primary language. Regardless of race/ethnic origin, those children with English as a second language were less likely to have sealants and were more likely to have rampant caries and untreated disease.

Healthy People 2000 Objectives

The National Oral Health Objectives for the Year 2000 (Healthy People 2000) outline several oral health status objectives for young children. For the six- to eight-year-old children there are three primary oral health status objectives:

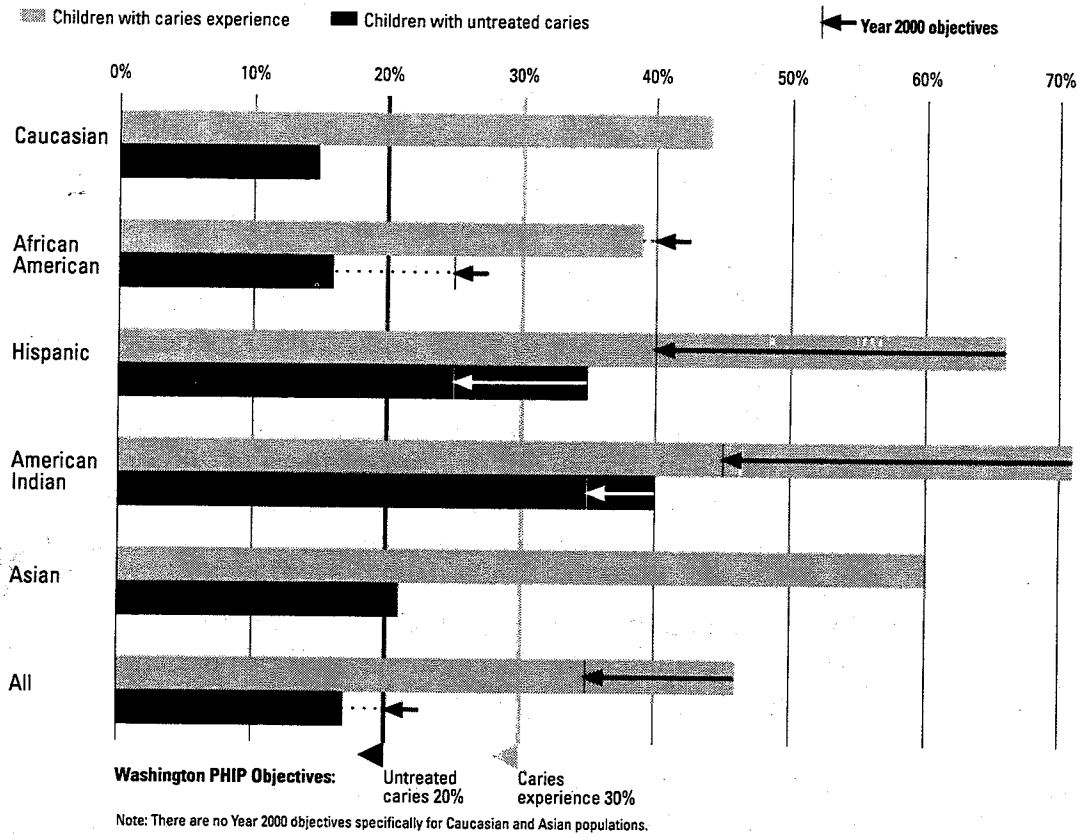
1. To decrease the proportion of children who have experienced dental caries in permanent or primary teeth to 35 percent (45 percent for low SES and Native American, and 40 percent for African-American and Hispanic children);
2. To decrease the proportion of children with untreated dental caries in permanent or primary teeth to 20 percent (30 percent for low SES, 35 percent for Native American, and 25 percent for African-American and Hispanic children) (Fig. 5);
3. To increase the proportion of eight-year-olds receiving protective sealing of the occlusal surfaces of permanent molar teeth to 50 percent (Fig. 6).

The State of Washington has set state-specific oral health objectives, based in part on Year 2000 Objectives, with the input and assistance of private and public organizations across the state. Unlike the Year 2000 Objectives, these Public Health Improvement Plan objectives are not broken down by race and ethnicity.

Almost 46 percent of the six- to eight-year-old children screened in Washington had experienced dental caries; higher than the Year 2000 and PHIP objectives of 35 percent. Seventeen percent of the Washington children had untreated caries compared to the Year 2000 Objective of 20 percent. Only 19 percent of eight-year-old children surveyed had dental sealants compared to an objective of 50 percent, or Washington state's objective of 65 percent (Appendices D and E).

Fig. 5–Oral Health Status of Elementary School Children with State and Year 2000 Objectives

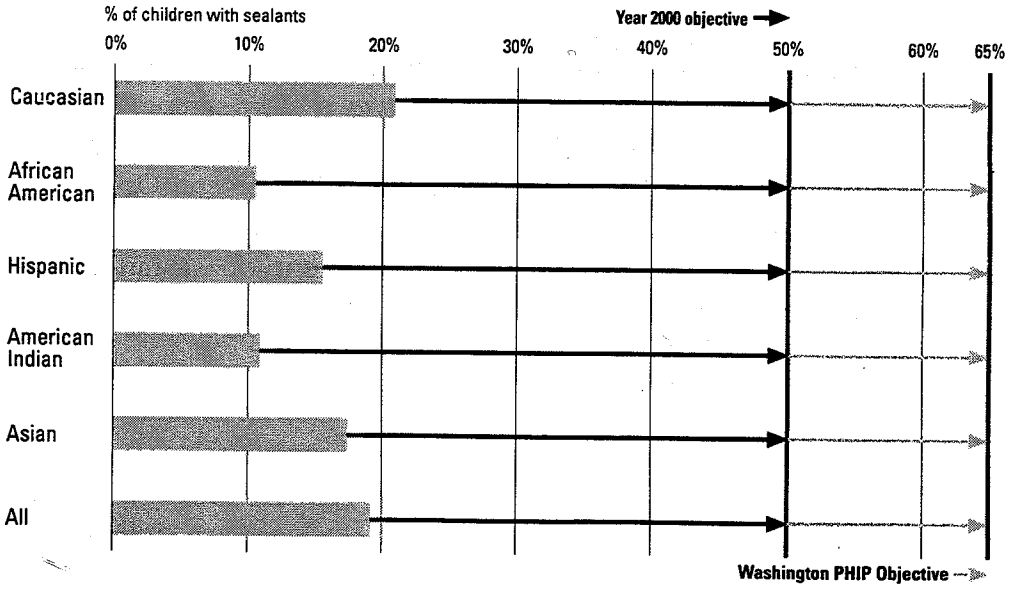
Washington State Smile Survey 1993–94

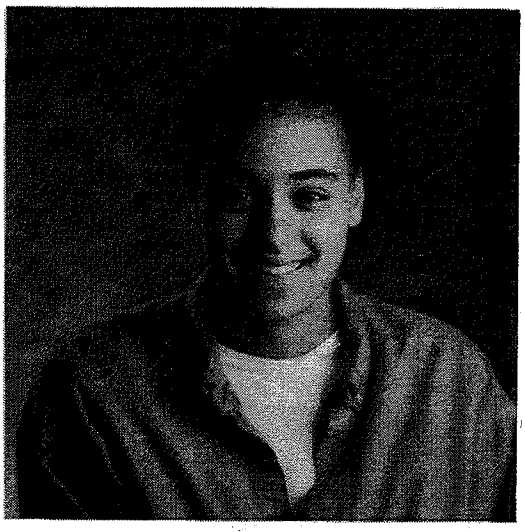


Note: There are no Year 2000 objectives specifically for Caucasian and Asian populations.

Fig. 6–Percent of Elementary School Children with Sealants with State and Year 2000 Objectives

Washington State Smile Survey 1993–94



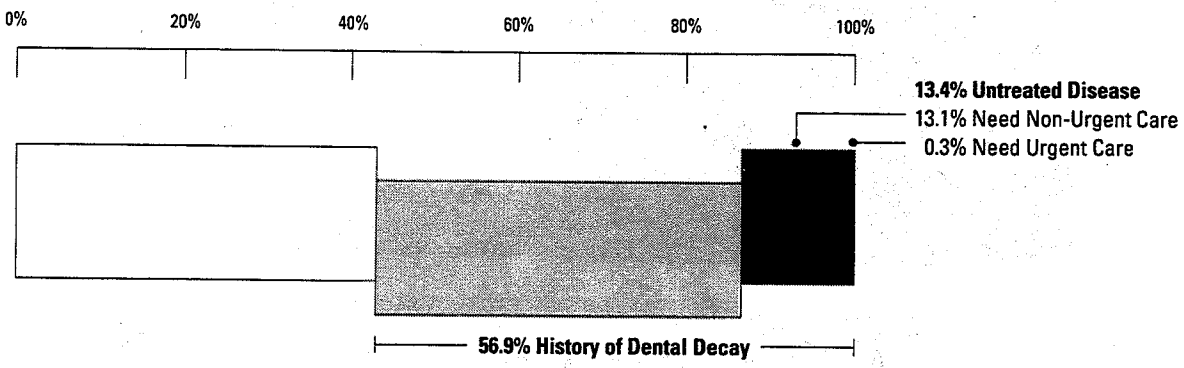


High School Adolescents

A total of 701 adolescents between 14 and 16 years of age were screened at 16 public high schools (mean age = 15.1 years). Fifty-five percent of the students screened were female, 72 percent were Caucasian, and English was the primary language for 90 percent of the students.

Fifty-seven percent of these students had experienced dental decay in their permanent teeth. Thirteen percent had untreated disease, including 0.3 percent needing urgent care for pain or infection (Fig. 7). At least one dental sealant was present on 42 percent of the students (Fig. 9). As with the two younger age cohorts, a higher proportion of the minority students screened were in need of dental care (Table 6, Page 32). These differences, however, were not always statistically significant, due to insufficient numbers.

Fig. 7–High School Students Needing Dental Care
Washington State Smile Survey 1993–94



Immigrant Status

When stratified by English skills, a higher proportion of Hispanic and Asian students for whom English was a second language were in need of restorative dental care (Table 7, Page 32). These differences were only significant for the Hispanic students.

Rural/Urban Status

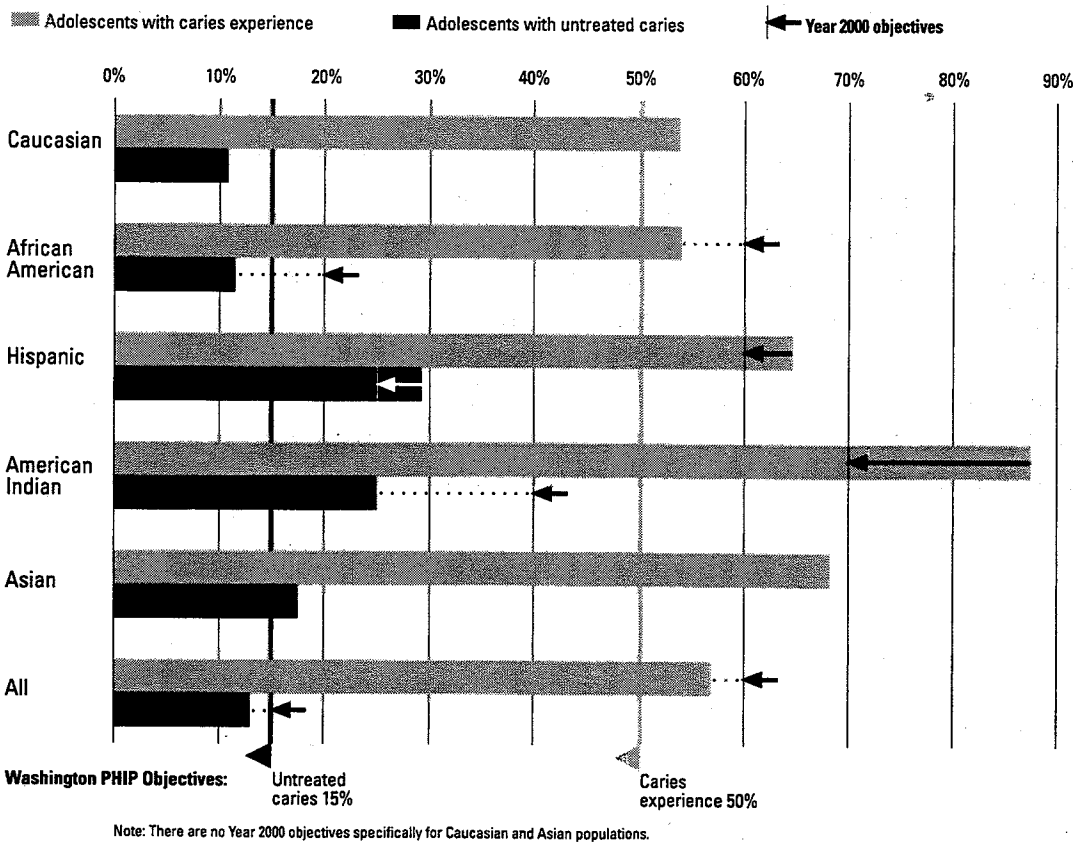
When the data were stratified by rural/urban status, differences appeared in the proportion of students in need of dental care. For these adolescents, 17 percent of the rural Caucasian students need dental care, while only 6 percent of the urban Caucasian students were in need of care. There was no difference, however, in the percent of students with experience of tooth decay.

Healthy People 2000 Objectives

There are three Year 2000 Oral Health Objectives which address adolescents (Appendix D):

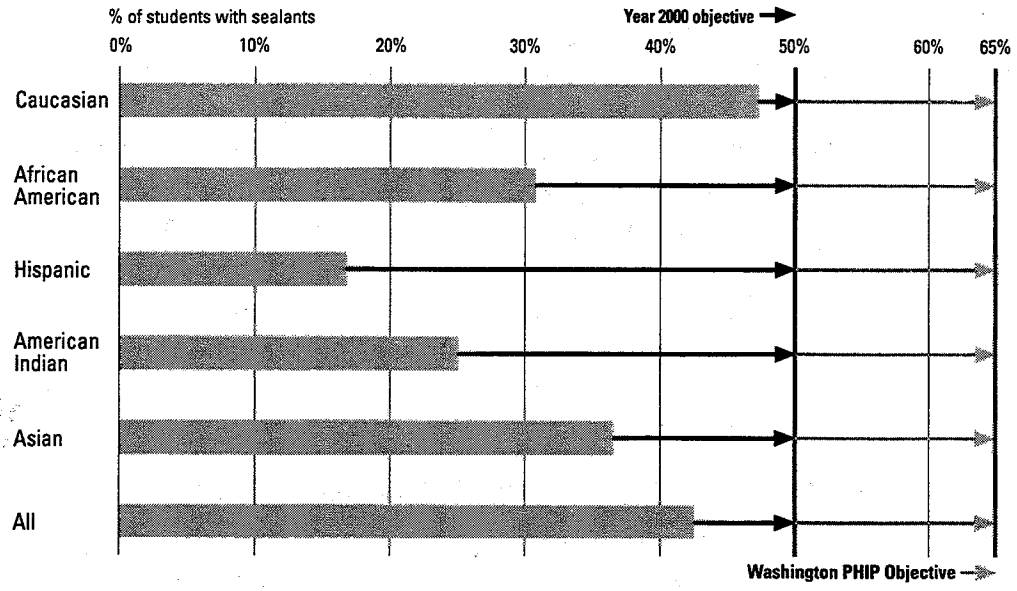
1. To decrease the proportion of adolescents who have experienced dental caries in permanent teeth to 60 percent (70 percent for Native American adolescents);
2. To decrease the proportion of adolescents with untreated dental caries to 15 percent (25 percent for low SES and Hispanic, 40 percent for Native American, and 20 percent for African-American adolescents) (Fig. 8);
3. To increase the proportion of 14-year-olds receiving protective sealing of the occlusal surfaces of permanent molar teeth to 50 percent (Fig. 9).

Fig. 8–Oral Health Status of High School Students with State and Year 2000 Objectives
Washington State Smile Survey 1993–94



Note: There are no Year 2000 objectives specifically for Caucasian and Asian populations.

Fig. 9–Percent of High School Students with Sealants with State and Year 2000 Objectives
Washington State Smile Survey 1993–94



Overall, the Washington students screened have met the Year 2000 Objectives for caries experience and untreated decay and are close to meeting the Year 2000 Objective for sealants. Although two of the Year 2000 Objectives have been met by the Caucasian and African-American children, substantial improvements need to be made in the oral health of Hispanic, American Indian, and Asian students. In addition, it appears that sealant programs need to be encouraged in Hispanic, African-American and other minority communities.

Conclusions:
From Numbers to Programs

The Smile Survey intentionally targeted those populations at highest risk. The children and adolescents screened were likely to have among the highest rates of dental disease in the state. In addition, those individuals at highest risk of having dental disease (based on low socio-economic status, minority or immigrant status, and rural locations) were also the least likely to have access to routine dental care.

The results of the Smile Survey indicate that among high-risk children, Hispanic, American Indian and Asian children are at highest risk for disease. Preschoolers from the Head Start/ ECEAP populations are particularly vulnerable to dental disease.

The survey underestimates disease rates because teeth were screened by visual means only. Higher disease rates would have been identified with the use of x-rays. Numbers of participating adolescents may have been insufficient to be representative.

Perspective

This survey utilized a practical approach to gathering information for program planning purposes. It will be used as part of a statewide initiative spearheaded by the Washington State Oral Health Coalition to increase access to dental care for low-income children. Results of the survey cannot be used to estimate the oral health status of all children and adolescents. However, the information gained will be used to monitor the disease status of high-risk populations.

This survey was limited to oral health status and disease indicators, and did not investigate knowledge, attitudes, or practices on the part of either children or caregivers. Information on attitudes and behavior patterns, particularly culturally specific norms, would also be extremely valuable for program planning.

Other sources of data for program planning include: the Medical Assistance Administration's Dental Statistics Report of 1994, the University of Washington 1994 third grade oral health status survey, the BRFSS (Behavioral Risk Factor Status Survey, CDC), including adult dental behaviors, and Washington Survey of Adolescent Health Behaviors, including information on dental visits and use of tobacco and alcohol.

Programs that make a difference

With the data from the Smile Survey, progress can be made toward improving the oral health of high-risk children and adolescents, and moving toward the objectives outlined in Healthy People 2000 and Washington State's Public Health Improvement Plan. To meet these objectives, population-based prevention programs must be established which:

- Target counties and communities where the need is greatest;
- Serve children and adolescents of racial/ethnic minority groups with culturally specific programs;
- Make a special effort to reach those for whom English is a second language with culturally specific programs;
- In addition to treating dental problems, focus on prevention education, primary prevention at an early age, and preventive sealants;
- Increase the number of dentists, especially dentists accepting Medicaid coupons in high-risk counties and in rural/underserved areas; and
- Continue surveillance to measure progress on the oral health status of high-risk children and adolescents.

Prevention saves smiles

Preventive oral health care is a cooperative, coordinated endeavor involving the activities of communities, professionals, and individuals. Recommendations for action and specific strategies to improve oral health are included in Washington's Public Health Improvement Plan (PHIP) (Appendix E):

- Develop an oral health surveillance system to document oral health status, dental treatment needs, and use of dental services.
- Screen all children for oral health problems at school entrance, with referrals to appropriate providers and follow up for preventive services.
- Identify and monitor dental health profession shortage areas on a yearly basis. Provide adequate oral health personnel in these areas.
- Require that all eligible public water systems (those serving over 1000 people) be fluoridated.
- Raise reimbursement rates for providing services to Medicaid eligible clients. Create incentives for providing preventive services.
- Establish school-based sealant application programs.
- Establish programs to train medical professionals and other health related workers to recognize oral health problems, including detection of oral HIV symptoms, oral cancer, and infant caries (BBTD).
- Develop screening programs for children during the first year of life and pilot studies using innovative interventions to prevent caries in infants and young children.

Further study

The Washington Smile Survey has provided a valuable format for further investigation into oral health status and related risk factors. Local communities are using the Smile Survey format to collect information specific to their needs, ensuring that community assessments include oral health indicators among other general health data.

At the state level, work is being done to develop an oral health surveillance instrument to measure oral health status within communities on an ongoing basis. The state will be developing a plan to conduct similar studies at five-year intervals to measure progress toward Year 2000 and PHIP objectives.

At the same time, information needs to be gathered within ethnic populations to determine culturally specific needs. Further work is indicated to refine the ESL (English as a Second Language) indicator as it may apply to disease status and program planning.

Tables

Table 1:
Oral Health of Washington's Head Start and ECEAP Children

	Caucasian n=698	African American n=82	Hispanic n=163	American Indian n=30	Asian n=90	All n=1063
Children with caries experience	31.5%	28.0% p=0.521	54.6% p<0.001	43.3% p=0.174	67.8% p<0.001	38.2%
Children with rampant caries	8.2%	4.9% p=0.294	17.8% p<0.001	26.7% p<0.001	23.3% p<0.001	11.2%
Children with untreated caries	15.6%	12.2%	38.0%	30.0%	33.3%	20.7%
Children needing treatment	15.9%	13.4% p=0.557	38.0% p<0.001	30.0% p=0.042	35.6% p<0.001	21.2%
Children needing urgent treatment	6.0%	3.7%	11.0%	23.3%	7.8%	7.2%

p values are based on Chi-Square tests comparing each racial group to Caucasians

Table 2:
Oral Health of Status of Washington's Head Start and ECEAP Children Stratified by Race and English Skills

	Hispanic			Asian		
	English Primary n=71	English Secondary n=92	p value	English Primary n=19	English Secondary n=71	p value
Children with caries experience	47.9%	59.8%	0.130	47.4%	73.2%	0.032
Children with BBTD	11.3%	20.7%	0.110	26.3%	42.3%	0.206
Children needing treatment	36.6%	39.1%	0.743	21.1%	39.4%	0.137

p values are based on Chi-Square tests comparing English status within each racial group

Table 3:
Washington's Head Start and ECEAP Children with BBTD

	Caucasian	African American	Hispanic	American Indian	Asian	All
B/L decay on 2 or more max incisors	9.5%	7.3% p=0.527	16.5% p=0.008	23.4% p=0.013	38.9% p<0.001	13.3%
B/L decay on 3 or more max incisors	7.1%	4.9% p=0.466	8.5% p=0.489	10.1% p=0.535	25.6% p<0.001	8.8%

p values are based on Chi-Square tests comparing each racial group to Caucasians

Table 4:
Oral Health Status of Washington's 6 – 8-Year-Olds

	Caucasian n=3662	African American n=332	Hispanic n=265	American Indian n=65	Asian n=311	All n=4635
Children with caries experience	43.5%	38.6% p=0.083	65.7% p<0.001	70.8% p<0.001	59.5% p<0.001	45.8%
Children with caries experience–permanent teeth	6.6%	1.8% p<0.001	9.1% p=0.126	1.5% p=0.101	5.8% p=0.574	6.2%
Children with rampant caries (or history of)	9.9%	4.8% p=0.003	24.5% p<0.001	27.7% p<0.001	15.1% p<=0.003	10.9%
Children with untreated caries	14.9%	16.0% p=0.597	35.1% p<0.001	40.0% p<0.001	21.2% p=0.003	16.9%
Children needing treatment	14.6%	15.1% p=0.836	34.3% p<0.001	40.0% p<0.001	20.9% p=0.003	16.6%
Children needing urgent treatment	1.9%	2.7%	3.4%	6.2%	3.2%	2.2%
Children with sealants	20.6%	10.5% p<0.001	15.5% p=0.046	10.8% p=0.052	17.4% p=0.178	19.2%

p values are based on Chi-Square tests comparing each racial group to Caucasians

Table 5:

Oral Health of Status of Washington's 6 – 8-Year-Olds Stratified by Race and English Skills

	Caucasian			Hispanic			Asian		
	English Primary n=3628	English Secondary n=34	p value	English Primary n=130	English Secondary n=135	p value	English Primary n=197	English Secondary n=114	p value
Children with caries experience	43.2%	76.5%	<0.001	64.6%	66.7%	0.725	55.3%	66.7%	0.050
Children with rampant caries	9.6%	38.2%	<0.001	17.7%	31.1%	0.011	7.6%	28.1%	<0.001
Children needing treatment	14.6%	17.7%	0.618	26.2%	42.2%	0.006	15.2%	30.7%	0.001
Children needing urgent treatment	1.9%	5.9%		3.1%	3.7%		1.0%	7.0%	
Children with sealants	20.8%	0.0%	0.003	21.5%	9.6%	0.007	22.3%	8.8%	0.002

p values are based on Chi-Square tests comparing English status within each racial group

Table 6:
Oral Health Status of Washington's 14–16-Year-Olds

	Caucasian n=508	African American n=52	Hispanic n=48	American Indian n=8	Asian n=85	All n=701
Students with caries experience–permanent teeth	53.7%	53.8% p=0.934	64.6% p=0.132	87.5% p=0.054	68.2% p=0.010	56.9%
Students with rampant caries (or history of)	8.9%	3.8% p=0.213	10.4% p=0.715	12.5% p=0.718	9.4% p<=0.864	8.7%
Students with missing permanent teeth	2.6%	0.0% p=0.244	8.3% p=0.026	0.0% p=0.647	7.1% p=0.029	3.3%
Students with untreated caries	10.8%	11.5% p=0.875	29.2% p<0.001	25.0% p=0.203	17.6% p=0.070	13.1%
Students needing treatment	10.8%	13.5% p=0.561	29.2% p<0.001	25.0% p=0.203	18.8% p=0.035	13.4%
Students needing urgent treatment	0.2%	0.0%	0.0%	1.2%	3.2%	0.3%
Students with sealants	47.4%	30.8% p=0.021	16.7% p<0.001	25.0% p=0.205	36.5% p=0.058	42.5%

p values are based on Chi-Square tests comparing each racial group to Caucasians

Table 7:
Oral Health of Status of Washington's 14 – 16-Year-Olds Stratified by Race and English Skills

	Hispanic English Primary n=71	Hispanic English Secondary n=92	p value	Asian English Primary n=19	Asian English Secondary n=71	p value
Students with caries experience	81.2%	56.2%	0.088	68.7%	70.3%	0.723
Students needing treatment	12.5%	37.5%	0.072	16.7%	21.6%	0.562
Students with sealants	37.5%	6.3%	0.006	37.5%	35.1%	0.822

p values are based on Chi-Square tests comparing English status within each racial group

References

1 National Institute for Dental Research, Oral Health of United States Children, The National Survey of Dental Caries in U.S. School Children, 1986-1987, U.S. Public Health Service, NIH Pub. #89-2247, 1989.

2 Public Health Improvement Plan, Washington State Department of Health, Olympia, 1994.

3 Burt BA, Eklund SA. Dentistry, Dental Practice and the Community, Philadelphia, WB Saunders, 1992.

4 National Institutes of Health, U.S. Public Health Service, Department of Health and Human Services, The prevalence of dental caries in United States children, 1979-80.

5 Children's Defense Fund, 1991.

6 Department of Social and Health Services, Medical Assistance Administration, 1994.

7 Maternal and Child Health Oral Health Program, Dental Braintrust Report, Washington State Department of Health, Olympia, 1992.

8 Maternal and Child Health Oral Health Program, The Oral Health of Washington Children and an Oral Health Surveillance Plan, Washington State Department of Health, Olympia, 1993.

9 Longitudinal Study and Annual Report, Washington State Early Childhood Education and Assistance Program, 1991.

Appendix A
Glossary

BBTD	Baby Bottle Tooth Decay, a disease of young children characterized by a distinct pattern of severe tooth decay in primary teeth
buccal surface	the tooth surface toward the lip, while the lingual surface is the side toward the tongue
caries	cavities
dental disease	an infectious disease process caused by bacteria in the mouth
dentition	the number and kind of teeth and their arrangement in the mouth
ECEAP	Early Childhood Education and Assistance Program
ESL	English as a Second Language
MCH	Maternal and Child Health
NIDR	National Institute of Dental Research
PHIP	Washington State's Public Health Improvement Plan
primary teeth	"baby" teeth, the first set of teeth that appear in the mouth
rampant caries	seven or more caries, defines a "serious" dental disease pattern
sealant	thin plastic coating applied to the chewing surface of a tooth to provide a physical barrier to the bacteria which cause decay
SES	socio-economic status

Appendix B
Surveillance Form and Instructions

MCH ORAL HEALTH PROGRAM
ORAL HEALTH SURVEILLANCE FORM

Date of Exam Month ☐☐ Day ☐☐ Year ☐☐	Location ☐☐☐☐	Examiner ☐☐☐☐	ID Number ☐☐☐☐
Sex ☐ M=Male F=Female	Age ☐☐	Race ☐ 0=Unknown 1=Caucasian 2=Afri-Amer 3=Hispanic 4=Native Amer 5=Asian	ESL Status ☐ 1=Eng Primary 2=Eng Secondary 3=No Eng Skills	BBTD ☐ 0=No 1=1 Ant 2=2 Ant 3=3 Ant etc.
Caries History ☐ 1=No Caries 2=Primary 3=Perman 4=Both	Rampant Caries ☐ 1=No 2=Yes	Untreated Caries ☐ 1=No untreat. 2=Untreated	Sealants ☐ 1=None 2=≥ 1	Tx Referral ☐ 1=No Tx 2=Routine 3=Urgent
Permanent Tooth Loss ☐ **15 Yr Olds Only** 1=No Missing Teeth 2=1-31 Missing Teeth 3=Edentulous	Comments:			

BBTD = Caries history on the buccal and/or lingual of the maxillary anteriors
Rampant Caries = Caries history on 7 or more teeth

CODING INSTRUCTIONS

Date of Exam:	Self-explanatory
Location:	Use pre-assigned location code for each site
Examiner:	Use your initials; i.e. MEBK, KRP, etc.
ID Number:	Optional, use only if you plan follow-up
Sex:	Self-explanatory
Age:	Current age in years
Race:	Self reported race

ESL: If the child's primary language is English the code = 1, if the child's primary language is not English but the child can speak some English the code = 2, if the child has no English skills at all the code = 3.

BBTD: This data are being collected in order to measure the prevalence or decay pattern affecting the maxillary anterior incisors and canines. We are only interested in buccal and/or lingual decay patterns not mesial/distal. If a child has no maxillary anterior teeth with buccal/lingual decay the code = 0, if one tooth has buccal/lingual decay the code = 1, if two teeth have buccal/lingual decay the code = 2, etc. If the child has crowns or teeth missing due to caries, assume that the disease pattern was buccal and/or lingual; i.e., if four teeth have stainless steel crowns and none of the other maxillary anterior teeth have buccal/lingual decay the code = 4.

Caries History: This item measures life-time caries history and includes carious. filled and missing teeth. If a child has no decay, no fillings, and no missing teeth the code = 1. If a child has decay or fillings in the primary teeth or a primary tooth missing due to caries but no decay, fillings, or missing permanent teeth the code = 2. If a child has decay or fillings in the permanent teeth or a permanent tooth missing due to caries but no decay, fillings or missing primary teeth the code = 3. If a child has a history of decay or an active carious lesion in both primary and permanent teeth the code = 4.

Rampant Caries: A child is considered to have a history of rampant caries if seven or more teeth have a carious lesion, a filling, or are missing due to caries (both primary and permanent combined).

Untreated Caries: If a child has a carious lesion which has not been treated the code = 2. If the tooth has been treated with a temporary filling the code = 1.

Sealants: If at least one permanent tooth has signs of a complete or partial sealant the code = 2.

TX Referral: This code is used to determine the need for referral for restorative dental treatment. The codes are defined as follows: 1 = a child with no current need for restorative dental treatment, 2 = the child is in need of restorative treatment (decay, broken filling, temporary fillings) but has no sign of any abscesses, 3 = the child has an abscess or reports being in pain.

Permanent Tooth Loss (15-year-olds only): If a child as a permanent tooth missing due to caries the code = 2.

Comments: Record anything interesting or unusual regarding the child's oral health, i.e. oral lesion present, juvenile periodontitis, ANUG, etc.

Appendix C
Participating Schools

Cowlitz County
2 Elementary, 1 High School,
1 Head Start/ECEAP

Yale Elementary
11842 Lewis River Road
Arill, WA 98603
(360) 231-4246
Head Teacher: John Huffman

Touttle Lake Secondary School
5050 Spirit Lake Memorial Hwy
Touttle, WA 98649
(360)274-6132
Principal: Gerald Black

Catlin Elementary
404 West Long Street
Kelso, WA 98626
(360) 577-2420
Principal: Anne Hill

Longview Head Start
1410 7th Avenue
Longview, Wa 98632
Pat Brinkman (360) 577-2388
Carlene DeGallier (360) 578-1414

Franklin County
1 Elementary, 1 High School,
1 Head Start/ECEAP

Captain Gray Elementary
1102 N. 10th Avenue
Pasco, WA 99501
(509) 547-2474
Principal: Jane Carlton

New Horizons
3110 W. Argent Road
Pasco, WA 99301
(509) 574-7775
Principal: Connie Bailey

Pasco Head Start
Benton-Franklin Head Start
1301 Sacramento Blvd., #110
Richland, WA 99352
Nancy Jarrett (509) 946-4639

Grays Harbor County
2 Elementary, 1 High School,
2 Head Start/ECEAP

A.J. West Elementary
1801 Bay Avenue
Aberdeen, WA 98520
(360) 533-1901
Principal: William O'Donnell

Elma High School
1235 Elma Monte Road
Elma, WA 98541
(360) 482-3121
Principal: Paul Ganalon

Cosmopolis Elementary
1439 4th Street
Box 479
Cosmopolis, WA 98537
(360) 532-7181
Principal: K. Marcella Bramstedt

Elma ECEAP
30 Elma-Monte Road
Elma, WA 98541

Ocosta ECEAP
Ocosta Elementary
Star Route
Westport, WA 98595

Island County

4 Elementary, 3 High Schools

Coupeville Elementary
6 South Main
Coupeville, WA 98239
(360) 678-4551
Principal: Susan M. Kaelin

Coupeville High School
501 South Main
Coupeville, WA 98239
(360) 678-4409
Principal: Rock T. White

South Whidbey Elementary
P.O. Box 350
Langley, WA 98260
(360) 221-5265
Principal: Judith Fenton

South Whidbey High School
P.O. Box 390
Langley, WA 98260
(360) 221-4300
Principal: Guy Pitzer

Oak Harbor High School
8616 800th Ave. W
Oak Harbor, WA 98277
(360) 679-5806
Principal: Richard Devlin

Broad View Elementary
10329 105th NW
Oak Harbor, WA 98277
(360) 679-5801
Principal: Mallory Thomas

Crescent Harbor Elementary
330 E. Crescent Harbor Rd.
Oak Harbor, WA 98277
(360) 670-5803
Principal: Audrey Lord

Okanagan County

1 Elementary, 1 High School,
1 Head Start/ECEAP

Nespelem Elementary
Box 291
Nespelem, WA 99155
(206) 634-4541
Principal: Loren Fitting

Omak High School
Box 833
Omak, WA 98841
(206) 826-5150
Principal: Roy Abshire

Okanogan Head Start
Kate Hagan, Health Coordinator
P.O. Box 1844
Omak, WA 98441
(509) 826-2466
Brewster Center (509) 689-3333

Pacific County

1 Elementary, 1 High School,
1 Head Start/ECEAP

Riverview Primary
550 Washington Street
Raymond, WA 98577
(360) 942-2494
Prinicpal: Aleta Matteson

Naselle-Gray River Jr./Sr.
HCR 78, Box 471-S
Naselle, WA 98638
(360) 484-7121
Principal: Thomas Alsbury

Long Beach Elementary
P.O. Box 758
Long Beach, WA 98631
(360) 642-3242
Principal: Tom Akerlund

South Bend ECEAP
c/o South Bend School District
P. O. Box 437
South Bend, WA 98586
Laurie May
(360) 875-6017

Pend Orielle County

1 Elementary 1 High School,
1 Head Start/ECEAP

Sadie Halstead Elementary
P.O. Box 70
Newport, WA 99156
(206) 447-2426
Principal: Carol Bourassa

Selkirk High School
Rt. 2, Box 595
Ione, WA 99139
(360) 466-3505
Principal: Kim Carlson

Newport Head Start
Tammy Newman
203 S. Calispel
P.O. Box 2077
Newport, WA 99156
(206) 447-5129
Principal: Louis Musso

Seattle-King County

20 Elementary, 3 High Schools,
3 Head Start/ECEAP

Chinook Elementary
3502 Auburn Way S.
Auburn, WA 98002
(206) 931-4980
Principal: Allen Price

Evergreen Heights Elementary
5602 S. 316th Street
Auburn, WA 98001
(206) 931-4974
Principal: Joseph Binetti

Terminal Park Elementary
1101 D Street S.E.
Auburn, WA 98002
(206) 931-4978
Prinicpal: Donna Smith

Phantom Lake Elementary
1050 160th Avenue S.E.
Bellevue, WA 98008
(206) 455-6290
Principal: Sylvia Hayden

Spiritridge Elementary
16401 S.E. 24th Street
Bellevue, WA 98008
(206) 455-6300
Principal: Gary St. George

Campbell Hill Elementary
6418 S. 116th Avenue
Seattle, Wa 98178
(206) 235-2273
Prinicpal: Mary Ford

East Hill Elementary
9825 S. 240th
Kent, WA 98031-4898
(206) 859-7455
Principal: Gary St. George

Scenic Hill Elementary
26025 Woodland Way S.
Kent, WA 98031-6199
(206) 859-7479
Principal: Wallace Clausen

Lakeridge Elementary
7400 S. 115th Street
Seattle, WA 98178
(206) 235-2310
Prinicpal: William Gladsjo

Cascade Elementary
16022 116th Avenue S. E.
Renton, WA 98055
(206) 235-2280
Principal: Fred Anderson

Hazel Valley Elementary
402 S.W. 132nd Street
Seattle, WA 98146
(206) 433-2434
Principal: Leslie Perry

Madrona Elementary
3030 S. 240th Street
Seattle, WA 98198
(206) 433-2478
Principal: Nancy Mooers

Sunnycrest Elementary
24629 42nd Avenue S.
Kent, WA 98032
(206) 839-7800
Principal: Gaye Greeves

Valhalla Elementary
27847 42nd Avenue S.
Auburn, WA 98001
(206) 859-0130
Principal: Dr. Maurice Huggins

Parkwood Elementary
1815 N. 155th Street
Seattle, WA 98133
(206) 368-4150
Principal: Sharon Ray

Cascade View Elementary
13601 32nd S.
Seattle, WA 98168
(206) 243-4583
Principal: Karen Abbott-Custer

Tukwila Elementary
5939 S. 149th Street
Tukwila, WA 98168
(206) 242-3420
Principal: Dick Fain

Thorndyke Elementary
4415 S. 150th Street
Tukwila, WA 98168
(206) 246-1110
Principal: Jim Miles

Snoqualmie Elementary
755 Park Street
Snoqualmie, WA 98065
(206) 888-2267
Principal: Les Jones

Black Diamond Elementary
25314 Baker Street
Black Diamond, WA 98010
(206) 886-2861
Principal: David Wickersham

West Auburn Senior High School
401 W. Main Street
Auburn, WA 98002
(206) 931-4990
Principal: Robert Wiley

Bellevue Senior High School
10416 S.E. Kilmarnock Street
Bellevue, WA 98004
(206) 455-6146
Principal: Kevin Wulff

Renton High School
400 S. 2nd Street
Renton, WA 90055
(206) 235-2255
Principal: Kay Hermann

Phil Sorenson, H.S. Director
Shoreline Head Start
Meridian Park School 542-7866
17077 Meridian Avenue N
Seattle, WA 98133
(206) 368-4115
Teachers: Deanna Steklenburg;
Jane Bolt

Julie Soto, H.S. Director
Bellevue Community College
3000 Landerholm circle SE
Bellevue, WA 98007
(206) 641-5296
Teacher: Doreen Tanenbaum
641-2372

Joseph Bineti, N.S. Director
Auburn Head Start
Evergreen Heights Elementary
5602 S. 316th
Auburn, WA
(206) 931-4943
Head Start: 931-4974

City of Seattle

2 Elementary, 2 High Schools

African-American Academy
3928 S. Graham
Seattle, WA 98118
(206) 281-6755
Principal: Winthrop Cameron

Cleveland High School
5511 15th Avenue S.
Seattle, WA 98108
(206) 281-6020
Principal: Andy Tangalin

Sanislo Elementary
1812 S.W. Myrtle Atreet
Seattle, WA 98106
(206) 281-6730
Principal: Don Damon
281-6870
Principal: Victoria Foreman

Rainier Beach High School
8815 Seward Park Avenue S.
Seattle, WA 98118
281-6090
Principal: Roberta Barnham

Spokane County

4 Elementary, 2 High Schools

Colbert Elementary
East 4625 Greenbluff Road
Colbert, WA 99005
(509) 468-3028
Principal: Conn Wittwer

Cheney High School
460 N. 6th
Cheney, WA 99004
(509) 235-9510
Principal: Jerry Knott

Nine Mile Falls Elementary
W. 10102 Charles Road
Nine Mile Falls, WA 99026
(509) 466-4422
Principal: Bob Stanek

Riverside High School
4120 E. Deer Park-Milan Road
Chattaroy WA 99003-9733
Principal: Mark Gorman

Liberty Elementary & Junior High
S. 29818 N. Pine Creek Road
Sangle, WA 99031-9797
(509) 245-3211
Principal: Ed Aylward

Deer Park Elementary
P.O. Box 609
Deer Park, Wa 99006
(360) 276-6881
Principal: Robert Rundell

Whatcom County

2 Elementary, 1 High School,
1 Head Start/ECEAP

Acme Elementary
P.O. Box 9
Acme, WA 98220
(206) 595-2178
Principal: Ellyn Erickson

Meridian High School
194 Laurel Road
Bellingham, WA 98226-9699
(206) 398-8111
Principal: Jim Kisner

Roosevelt Elementary
2900 Yew Street
Bellingham, WA 98226
(206) 676-6440
Principal: Stephanie Sadler

Alderwood Head Start
ECO NW
1200 Dupont, Suite 11
Bellingham, WA
(206) 734-8396

Yakima County

3 Elementary, 1 High School,
1 Head Start/ECEAP

Naches Valley Primary
2700 Old Naches Highway
Yakima, WA 98908
(509) 653-2329
Principal: R. Karen Craig

Eisenhower High School
703 S. 40th Avenue
Yakima, WA 98908
(509) 575-3270
Principal: David Betzing

Wapato Primary
P.O. Box 38
Wapato, WA 98951
(509) 877-2177
Principal: Art Edgerly

Lower Valley Head Start
605 No. 16th Avenue
Sunnyside, WA 98944
Elaine Jepson
(509) 837-5991

Garfield Elementary
505 Madison Avenue
Toppenish, WA 98948-1174
(509) 865-4575
Principal: Roy DeBoer

Appendix D
Year 2000 Objectives

13. Oral Health

Health Status Objectives

13.1
Reduce dental caries (cavities) so that the proportion of children with one or more caries (in permanent or primary teeth) is no more than 35 percent among children ages 6 through 8 and no more than 60 percent among adolescents age 15. (Baseline: 53 percent of children ages 6 through 8 in 1986-87; 78 percent of adolescents age 15 in 1986-87)

13.2
Reduce untreated dental caries so that the proportion of children with untreated caries (in permanent or primary teeth) is no more than 20 percent among children ages 6 through 8 and no more than 15 percent among adolescents age 15. (Baseline: 27 percent of children ages 6 through 8 in 1986; 23 percent of adolescents age 15 in 1986-87)

13.8
Increase to at least 50 percent the proportion of children who have received protective sealants on the occlusal (chewing) surfaces of permanent molar teeth. (Baseline: 11 percent of children age 8 and 8 percent of adolescents age 14 in 1986-87)

Appendix E
Public Health Improvement Plan

In 1994, the Washington State Department of Health and a 25-member steering committee developed the Public Health Improvement Plan as a blue print for improving the health of Washington's population. Poor oral health was identified as a key public health problem under Family and Individual Health. The following excerpt describes activity standards for oral health in the state:

Oral health

Dental disease is an infectious disease process affecting children and adults. It may be the most prevalent yet most preventable disease known to humans. By the age of 18, over 84% of children, 96% of adults and 99% of people age 65 years and older have experienced dental disease in the form of caries (cavities). This infectious disease process and associated conditions reduce overall health and productivity, increase health care costs, and may result in pain, loss of self esteem and even death.

Over 36% of four year old preschool children in Head Start programs in Washington State need dental treatment; the highest rate of need is 80% of Native American Head Start children in Pierce County experiencing active dental disease.

The public perception — especially among those who can afford dental care or are fortunate to have dental insurance — often is that dental disease, commonly thought of as cavities, is a "natural occurrence" that deserves little attention or dollars. Oral health problems are ignored as an integral part of health; "access" is assumed to refer to medical care.

In Washington State, the lack of access to dental care is at crisis levels for low income and Medicaid eligible clients. Hospital emergency rooms are handling cases costing up to $3000 to treat a child with infant caries (baby bottle tooth decay), a painful and debilitating dental disease which is totally preventable. Some people travel hundreds of miles to get treatment at community clinics which must turn away some children and adults needing urgent dental care.

Fluoridation of water supplies can significantly reduce the risk of dental disease, yet 2.9 million Washington residents, or 58%, do not drink fluoridated water.

Strategies to improve oral health include:

- Develop oral health surveillance systems to document oral health status, dental treatment needs, and use of dental services.
- Screen all children for oral health problems at school entrance, with referrals to appropriate providers and follow up for preventive services.
- Identify and monitor dental health profession shortage areas on a yearly basis. Provide adequate oral health personnel in Dental Professional Shortage Areas.
- Require that all eligible public water systems (serving over 1000 people) be fluoridated.
- Raise reimbursement rates for providing services to Medicaid eligible clients. Create incentives for providing preventive services.
- Establish school-based sealant application programs.
- Establish programs to train medical professionals and other health related workers to recognize oral health problems, including detection of oral HIV symptoms, oral cancer, and infant caries (baby bottle tooth decay).
- Develop screening programs for children during the first year of life and pilot studies using innovative interventions to prevent caries in infants and young children.

Oral health outcome standards

	Washington State				United States		
		Baseline		Year 2000 Target			Year 2000 Target
	Years	Count	Rate	Rate	Years	Rate	Rate
% Untreated Dental Decay in Permanenet or Primary Teeth							
Ages 6–8, All	1994	NA	17%	20%	1986–87	27%	20%
Native American	1994	NA	40%	20%	1986–87	64%	35%
African American	1994	NA	16%	20%	1986–87	38%	25%
Hispanic American	1994	NA	35%	20%	1986–87	36%	25%
Asian American	1994	NA	21%	20%	NA		
Ages 15, All	1994	NA	13%	15%	1986–87	23%	15%
Native American	1994	NA	25%	15%	1986–87	84%	40%
African American	1994	NA	12%	15%	1986–87	38%	20%
Hispanic American	1994	NA	29%	15%	1986–87	31–47%	25%
Asian American	1994	NA	18%	15%	NA		
% of Children Receiving Protective Sealants							
Ages 7–8	1994	NA	19%	65%	1986–87	11%	50%
Age 14	1994	NA	42%	65%	1986–87	8%	50%
% of Children <3 Years with BBTD (Infant Caries)	1994	NA	13%	5%	NA		
% of Children Entering School Receiving Oral Health Screening, Referral & Follow Up	NA	NA	0%	65%	NA		90%
% of Persons Age 65+ Who Have Lost All Natural Teeth	NA			25%	1986	36%	20%
% of Deaths Due to Cancer of Oral Cavity & Pharynx*	1994	NA	19%	65%	1986–87	11%	50%
Women	1991–92	68	5.1/100,000		1987	4.1/100,000	4.1/100,000
Men	1991–92	134	10.6/100,000		1987	12.1/100,000	10.5/100,000
% of Boys Using Smokeless Tobacco ages 12–17	1992	NA	23%	10%	1988	7%	4%
% of Medical Eligibles Using Oral Health Care System Ages 18–64	1990	NA	23%	50%	NA		
% of Total Population Using Oral Health Care System Age 35+	NA			70%	1986	54%	
% of Total Population Served by Optimally Fluoridated Community Water Systems	1993	NA	42%	55%	1986–87	62%	75%
% of Water Systems Fluoridated Serving >1000 persons	1994	NA	37%	100%	NA		100%

* Population for U.S. baseline data is ages 45–74; Population for WA baseline data is all ages.

Sources:

Community & Family Health, Oral Health Survey, Cancer Registry, Survey of Adolescent Health Behaviors, Environmental Health, Healthy People 2000

Appendix F
Dental Braintrust

Recommendations:

I. Improve Organization

- Establish an Office of Oral Health, within the Department of Health, with a director responsible for coordinating all state programs.

II. Develop a Surveillance Capacity

- Develop a data base, specifically for Washington State, to document oral health status.
- Design and implement an ongoing data collection and analysis system to assess oral health status and treatment needs.

III. Promote Primary Prevention

- Encourage statewide fluoridation of community water systems.
- Strengthen education and oral health promotion activities.
- Identify mothers and children at high risk for dental disease; assess their needs early and refer appropriately.
- Advance the use of sealants to prevent cavities on chewing surfaces of teeth.
- Advance the use of topical and systemic fluorides as preventive measures.

IV. Improve Access to Care

- Identify barriers which limit access, from patients' and providers' points of view.
- Ensure the oral health system has sufficient resources to meet the needs of all individuals for primary preventive services.
- Redesign provider incentives/regulations to facilitate optimal distribution of resources and to enhance access.
- Enrich third-party insurance benefits: broaden service coverage, increase reimbursement rates, and expand coverage to all citizens.